FEBRUARY 2008

ADVANCED ADHESIVES REPORT

Your corrugating newsletter from Harper/Love Adhesives Corporation

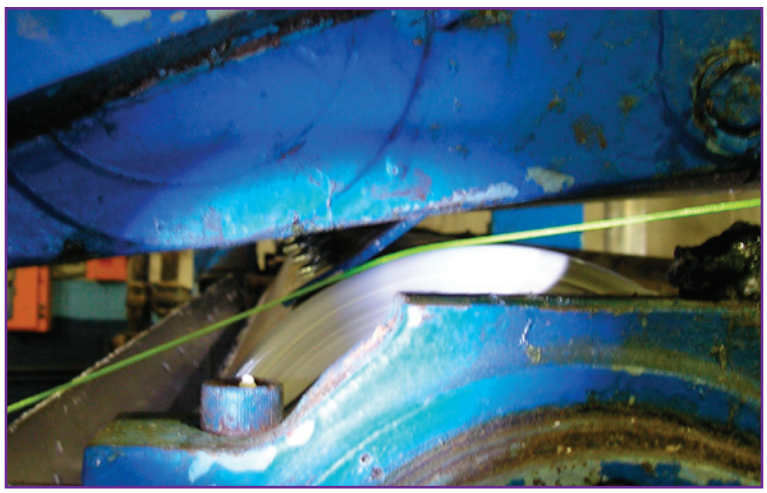
Contact bars

Correct installation and adjustment ensures proper performance

by Rex Woodville-Price

The position of a contact bar on the glue machine is determined by where the web contacts the glue roll. This is, in turn, affected by the path of the web through the glue machine. The top bar is usually in a different position, relative to the bottom one, because the path of the paper is different.

To determine the correct position in which to install a contact bar, the factory technician uses string to emulate the path of the paper through the machine (photo below). The string is pulled tight so it touches the glue roll. The exit and entry points of the string are marked on the roll using ink. Only tension forces the string (or the web) down onto the glue roll surface. In the instances where the string doesn't touch the roll, something must me done to make it touch the roll. This usually means moving the lead-in roll (idler roll) or installing an exit roll.



A contact bar is not a roll and cannot force the web into contact with the glue roll; it is *web tension* that forces the web against the roll. The function of the contact bar is to hold the paper against the glue roll should the tension vary from side to side.

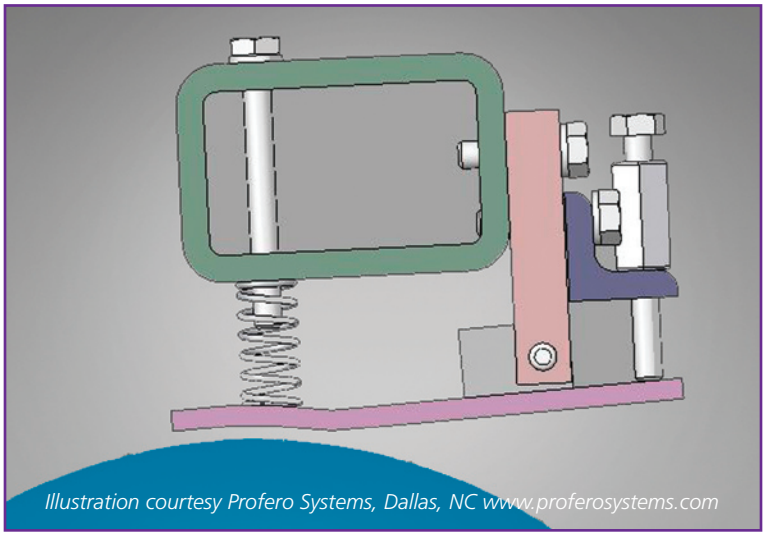


Illustration courtesy Profero Systems, Dallas, NC www.proferosystems.com

When the contact bar is in the proper position:

- The shoe's curved surface will be concentric with the glue roll when there is C flute underneath the shoe.
- The trailing edge of the shoe will be behind or upstream of the point where the web leaves the glue roll (otherwise web tension will lift the shoe off the web).
- With the shoe properly set (0.060" gap), the distance between the top of the shoe and the bottom of the tube (where the spring is trapped), should be 1-1/4 ± 1/16 inches.
- The bar will be parallel to the glue roll and will be level.

The ideal amount of wrap for a contact bar application is between 1 and 1-1/2 inches or about three-fourths of the curve of the shoe. Since the glue roll typically runs at 98% of paper speed, there is relative movement between the glue roll and the web. The flute tips literally scrape across the surface of the glue roll, building up adhesive on the leading edge of the flutes. If there is too much wrap (i.e. contact area) you may get directional fiber pull because most of the adhesive is deposited on the flank of the flute.

Don't set it and forget it

Just because it was once correctly installed by a factory tech, doesn't mean it is in the right position now. Things can move, and moving anything that alters the paper path through the glue machine can affect the contact bar. If a used glue machine, with contact bars already mounted, is installed on a corrugator line, there is no guarantee these

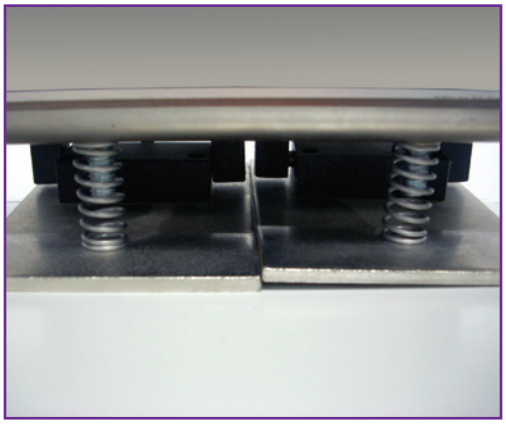
Next page, please

bars won't have to be repositioned to accommodate the new paper path.

We all like upgrades, but when it come to contact bars, the so-called *heavy-duty* springs offered by the factory need to be approached with caution. They are designed to crush the board a bit when the corrugating rolls are worn. They are not a better option and should be used only when truly needed as they may cause crush with weaker mediums.

Mind the gap

There seems to be a lot of confusion about the role of the gap adjustment and its effects. The gap adjustment mechanism is nothing more than a mechanical stop for the shoe. It does not and cannot affect the pressure the shoe exerts on the web. Spring pressure is determined by the distance from the contact bar tube to the glue roll. If a shoe is set at a gap of 0.030" and we run 0.143" C flute web, the shoe will be 0.143" away from the roll because the web is underneath it. If we now readjust that shoe to a gap of 0.060" and the run the same C flute, the shoe will be the same 0.143" away from the roll and thus have identical spring pressure exerted on the web.



The shoe on the right is out of level

The real importance of the shoe gap is to keep the shoes from touching and damaging the glue roll. They also keep them out of the glue. On the other hand, if the gap were allowed to exceed the caliper of web, then the shoe will not touch the web and therefore will not apply any pressure to it. With this in mind, the setting of the shoes as recommended by the factory is 0.060" for machines running B, C, or A flute and 0.030" for running E flute. Special microflutes such as F, G, or N may require even smaller gaps. Since smaller glue films are usually applied to these flutes, there is less chance of a shoe touching the glue. The plastic die backing (Mylar) used on most flexo presses is about 0.030" so it makes a good calibrating tool. It is flexible enough to conform to the curve under the shoe and soft enough not scratch the glue roll. Use two together for 0.060". Metal feeler gauges are too stiff and will generally cause the shoes to be set too high.

The amount of pressure the shoes exert on the web is affected by two variables. One is the caliper of the web, the taller the flutes, the more they compress the spring and consequently bear more pressure. The second (as mentioned before) is the distance from the contact bar tube to the glue roll. The contact bar is mounted to the same arms the rider roll was removed from. These come to rest on mechanical stops, so they don't change their distance from the glue roll. There is no reason to move these stops once they are properly set, they are not a method for adjusting the contact bar.

Anytime a bar is installed or shoes replaced, the shoes need to be leveled. If the shoes are bumped when a bar is removed from the machine, they will need to be leveled. Leveling the shoes in the cross-machine direction is easily done by tapping on the back of the hinge legs while looking at the shoe from the front; lower the side that is high. This will ensure even contact (and even wear) across the shoe face and extend the useful service life of the shoe. ■

Water misters: blessing or curse?

Sorting out the mysteries and misconceptions about this often maligned tool

By: Chris Polster

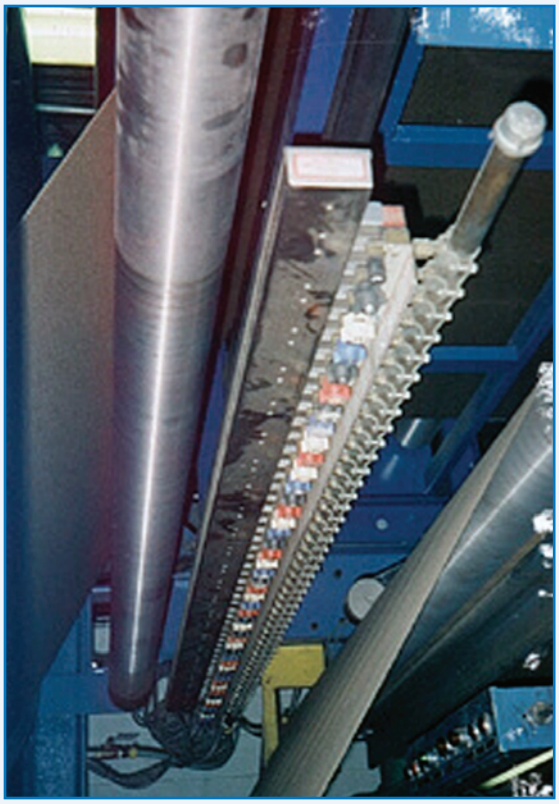
Water misters for the combined web have gotten a bad rap over the years. Some feel they cause more trouble than they cure, and simply see no sense in adding more moisture to the corrugating process.

Much of the bias against misters can be traced to poorly engineered units, poor maintenance, and a lack of understanding of when and how to use misting.

Early units were more *sprayers* than *misters*. The water volume was too high. Also, there were no controls that would limit their use to higher corrugator speeds. With the high volume of water and the low speeds at which they were sometimes activated, their use often led to terrible problems with post-corrugator warp.

Further exacerbating the problem was the fact that these units were typically installed without a filtration system. The orifices would often become plugged and inoperative. Quick-fix solutions included drilling out existing orifices or installing larger orifices, which just made things worse.

Most newer systems are truly water misters, not sprayers. They come with their own filter system and can be wired so that they are activated only above a certain corrugator speed.



Photograph courtesy Copar Corporation, Burbank, Il www.copar.com

It's all in how you use them

Like any other tool in your bag of tricks, water misters will serve you well if used properly. For example, almost every machine has a predominant warp profile that its crews have to combat. This predominant warp will usually be flute specific. On high-speed machines we will often see that the crews have a terrible time controlling down-warp on C flute. The problem gets worse as basis weight and speed are increased.

It is common to see crews resort to double-wrapping the bottom liner at the triple-stack to help fight down-warp. The wrap is not needed for the purpose of bonding, but rather only to help adjust for the down-warp. Not only does this cause downtime for rewrapping at flute changes, but during drier seasons the plant will often experience problems with cracking scores. Double-wrapping a bottom liner at the triple stack not only exposes the process to multiple problems, it is only marginally effective at fighting the down-warp. This is an example of where a water mister rather than a drastic wrap would be a much more prudent solution.

With or without double-wrapping the bottom liner, machine speeds are often limited on heavier weight combinations not by bond but rather by warp. They can bond these heavy-weight combinations at high speed but the sheets will come off the corrugator with so much down warp that it will be necessary to break the flaps to feed them to the hogger. This, too, could be a circumstance where a water mister could help a facility maximize its production while maintaining quality.

Success with misters depends on why, how and when you use them, and in keeping them properly maintained so they work right. Whether you need to run rolls that have a moisture imbalance, hit a combined-board moisture target, control warp, or deal with dozens of other possible scenarios, maybe it's time to put prejudice aside and take a fresh look at a water misters. ■

Regional Manager Chris Polster serves Harper/Love customers in the south-central and southwestern U.S. He is a 25-year veteran in the corrugating industry and has been with Harper/Love 11 years. Chris has authored many articles appearing in industry publications and is a frequent contributor to the Advanced Adhesives Report.

Leaders in the science of making good adhesives better™

Harper/Love Adhesives Corporation
11101 Westlake Drive
P.O. Box 410408
Charlotte, NC 28241-0408

800-438-3066 • www.harperlove.com
e-mail: salestech@harperlove.com

In this issue:

- Contact bars
- Misters

Three decades of service
To the corrugating industry

Aquaseal Plus™ Outstanding performance. Superior wet strength.

This unique product combines water resistance and high performance in one easy-to-use liquid product.

- Reduces cost compared to using carrier starch for performance, plus resin for wet strength
- Stable viscosity
- Exceeds TAPPI 24-hour soak test
- Better bond quality
- Increased corrugator speeds on heavyweight grades
- Single, simple application
- Easy-to-use liquid for any manual or automatic mixing system
- Safe to use. FDA approved

For detailed technical information or a demonstration in your plant, contact your Harper/Love representative or call us toll free at 800-438-3066.